

**Claim Listing**

Claim 1 (Original): A method for improving the system response of a photodetector array based spectrometer having a main light source with a primary spectral output, comprising the steps of:

- (i) determining a system response curve for said spectrometer over said spectrometer's operating spectral range;
- (ii) identifying at least one spectral band at which the system response curve falls below a predetermined value; and
- (iii) adding at least one secondary light source with a secondary spectral output complementary to said at least one spectral band identified in step (ii) so as to produce a combined spectral output which provides a modified system response curve which is at or above said predetermined value at said spectral band.

Claim 2 (Original): The method claimed in claim 1, further comprising the step of filtering said combined spectral output so as to reduce peaks in said system response curve.

Claim 3 (Original): The method claimed in claim 2, further comprising the step of masking said photodetector array so as to equalize said system response curve.

Claim 4 (Currently amended): A light source for a photodetector array based spectrometer, said light source comprising a primary light source producing a primary spectral output, said primary light source having a spectral range of from about 580 nm to about 1080 nm, said primary spectral output resulting in a ~~characteristic~~ system response curve having one, or more than one spectral band falling below a predetermined value within the spectral range of from about 580 nm to about 750 nm, or from about 850 nm to about 1080 nm, or both, and one, or more than one secondary light source producing a secondary spectral output complementary to said primary spectral output, wherein said secondary spectral output has a spectral range of from about 580 nm to about 750 nm, or from about 850 nm to about 1080 nm, or both, ~~which wherein said secondary spectral output combines with said primary spectral output, whereby, said to produce combined spectral output results in~~ a more uniform system response curve that is flatter than the system response curve obtained when a said primary light source alone is used.

Claim 5 (Original): The light source claimed in claim 4, wherein, the secondary light source is a broadband light source having a shaping filter.

Claim 6 (Original): The light source claimed in claim 4, wherein, the secondary light source is a narrow band light source.

Claim 7 (Original): The light source claimed in claim 6, wherein, said narrow band light source is selected from the group consisting of a narrow band fluorescent light source, a light emitting diode, and or a laser.

Claim 8 (Original): The light source claimed in claim 4, wherein, multiple light sources are combined by means of multiple branches of fibre optic bundles.

Claim 9 (Currently amended): A method for improving the system response of a photodetector array based spectrometer having a primary light source with a primary spectral output, comprising the steps of:

- (i) determining a system response curve for said spectrometer over said spectrometer's operating spectral range;
- (ii) identifying one, or more than one spectral band at which the system response curve falls below a predetermined value; and
- (iii) determining a modified system response curve for said spectrometer using said primary light source and one, or more than one secondary light source with a secondary spectral output, said secondary spectral output being complementary to said primary spectral output, wherein said modified system response curve ~~is~~ having a value at or above said predetermined value at said one, or more than one spectral band.

Claim 10 (Previously presented): The method claimed in claim 9, further comprising the step of filtering said combined spectral output so as to reduce peaks in said system response curve.

Claim 11 (Previously presented): The method claimed in claim 10, further comprising the step of masking said photodetector array so as to equalize said system response curve.

Claim 12 (New): A method for improving the system response of a photodetector array based spectrometer having a primary light source with a primary spectral output, comprising the steps of:

- (i) determining a system response curve for said spectrometer over said spectrometer's operating spectral range;
- (ii) identifying one, or more than one spectral band at which the system response curve falls below a predetermined value; and
- (iii) adding to said primary light source one, or more than one secondary light source with a secondary spectral output to produce a combined light source, said secondary spectral output being complementary to said primary spectral output of said primary light source, wherein said combined light source produces a modified system response curve having a value at or above said predetermined value at said one, or more than one spectral band.

Claim 13 (New): The method claimed in claim 12, further comprising the step of filtering said combined spectral output so as to reduce peaks in said system response curve.

Claim 14 (New): The method claimed in claim 13, further comprising the step of masking said photodetector array so as to equalize said system response curve.